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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 27

Application Number: 08/914,244
Filing Date: August 19, 1997
Appellant(s): LEGENDRE ET AL.

Peter K. Skiff
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed March 15, 2001.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-23 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,364,858	GOODBOY	12-1982
5,244,648	DUPIN ET AL.	09-1993
5,242,673	FLYTZANI-STEPHANOPOULOS ET AL.	09-1993

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3, 7, and 11-21 stand rejected under 35 U.S.C. 102(b) as being anticipated by Goodboy (4,364,858).

The Goodboy reference discloses a Claus catalyst in the form of activated alumina containing sodium oxide in an amount preferably between 0.1 and 2.5 wt% (1000 to 25000 ppm). This disclosed sodium oxide range of 1000 to 25000 ppm clearly anticipates the claimed ranges of 1200 to 2500 ppm, 1500 to 2500 ppm, 1200 to 2700 ppm, and 1700 to 2200 ppm sodium oxide. It is desirable for the catalyst to have a surface area greater than 300 m^2/g. This clearly anticipates applicant's claimed surface area. The catalyst is in the form of agglomerated particles (i.e., beads), the size of which can be adapted to a particular situation (i.e., fixed bed, mobile bed, or fluid bed). The Goodboy reference clearly discloses a Claus reaction which necessarily results in the removal of sulfur compounds from gases. Goodboy also discloses that hydrolysis of organic sulfur compounds occurs. (See col. 3, line 54 through col. 7, line 4.)

Claims 4-6, 8, 9, 22, and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Goodboy (4,364,858) in view of Dupin et al. (5,244,648).

As discussed above, the Goodboy reference does not disclose that the catalyst further comprises the components in claims 4-6, does not disclose the bead sizes of claims 8, 9, and 22, and does not disclose the pore volume as claimed in claim 23.

The Dupin reference discloses alumina-based catalysts that may be used in Claus processes. The alumina agglomerates may be formed using cellulose, charcoal or starches. They may also contain other components such as silica or alkaline earth metals. The agglomerates

have a volume of pores with a diameter greater than 10000Å (1 μm) of greater than 0.1 cm^3/g (>10 ml/100g). The volume of pores with diameters between 1000Å and 10000Å (0.1 μm and 1 μm) is between 0.10 and 0.15 cm^3/g (10-15 ml/100g). This disclosure results in pore volumes that overlap those claimed in claim 23. (See col. 2, line 60 through col. 9, line 8.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst of Goodboy by forming the catalyst with the components disclosed by Dupin because such components are pore forming agents and their use results in a porous catalyst.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst of Goodboy by including silica or alkaline earth metals as suggested by Dupin because the alumina will be heat stabilized.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst of Goodboy by having the pore volume within the ranges claimed because Dupin discloses that this pore volume results in an effective catalyst.

Regarding the claimed bead diameters, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst of Goodboy by utilizing a catalyst having the claimed bead sizes because Goodboy discloses that the size may be adjusted depending on the particular situation.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodboy (4,364,858) in view of Flytzani-Stephanopoulos et al. (5,242,673).

As discussed above, the Goodboy reference does not disclose that the alumina catalyst is deposited on a support substrate.

The Flytzani-Stephanopoulos reference discloses that sulfur recovery catalysts that contain aluminum oxide may be deposited on supports. (See col. 4, line 63 through col. 5, line 34.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst of Goodboy by supporting the catalyst as suggested by Flytzani-Stephanopoulos because a supported catalyst is equated to granules or pellets and therefore would be expected to be effective in a sulfur recovery process.

(11) Response to Argument

The argument that the Goodboy reference does not disclose appellant's claimed range of 1200 to 2500 ppm of sodium oxide with sufficient specificity to constitute anticipation is not persuasive because Goodboy's range of 0.1 to 2.5 wt% (1000 to 25000 ppm) of sodium oxide is a preferred range. Since it is a preferred range, the examiner maintains that one having ordinary skill in the art would be directed by the disclosure of Goodboy to use amounts within this preferred disclosed range. The lack of examples that utilize sodium oxide contents within the claimed ranges does not negate the teaching of sodium oxide values that completely cover the claimed range. A reference is not limited solely to the teachings in the examples. Therefore, the evidence of unexpected results is irrelevant as to overcoming the rejection.

The argument that claim 7 is not specifically addressed in the rejection is not persuasive because this claim is addressed in the rejection under 35 U.S.C. § 102(b). As stated in the rejection above, the catalyst of Goodboy is in the form of agglomerated particles. See, for example, column 5, lines 3-6. Appellants have not shown that the agglomerated particles of Goodboy are different from the claimed beads.

The argument that claims 11-15 are not addressed in the rejection is not persuasive because these claims are addressed in the rejection under 35 U.S.C. § 102(b).

The argument that there is no suggestion to use the claimed specific surface ranges is not persuasive because the disclosure in Goodboy that the specific surface is at least 300 m^2/g clearly discloses specific surface values within the claimed ranges.

The arguments that the rejection does not address claims 4-6, 8, 9, 22, and 23 are not persuasive because these claims are addressed in the rejection under 35 U.S.C. § 103.

With regard to the rejections under 35 USC 103, the assertion of unexpected results is insufficient to overcome the rejections. Goodboy clearly recognizes that sodium oxide concentration is a result-effective variable. See column 4, lines 1-17. Therefore, the examiner maintains that one of ordinary skill in the art would have adjusted the concentration of sodium oxide in order to adjust the catalyst performance for any desired process. Therefore, any improvement for CS_2 conversion would flow logically from the teaching of Goodboy.

The argument that the Goodboy reference provides no recognition that low Na_2O contents would be effective in providing improved CS_2 conversion rates is not persuasive. In support of this argument, appellants refer to column 4, lines 18-35. However, this section refers specifically to SO_2 chemisorption and not to all sulfur-containing compounds.

The argument that the modification of the Goodboy catalyst as suggested by Flytzani-Stephanopolous would be an impermissible change in the principle of operation of Goodboy's catalyst is not persuasive. The Flytzani-Stephanopolous reference clearly equates supported and unsupported catalysts in conversion processes similar to those disclosed by Goodboy. Therefore,

the examiner maintains that one of ordinary skill in the art would have a reasonable expectation of success when utilizing the catalyst of Goodboy on a support.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,
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WG
May 31, 2001

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